

We claim:

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1. A computerized method of annotating a computer program comprising:
 - parsing an annotation representation in the source code;
 - 5 transforming the annotation representation into intermediate language code;
 - and
 - generating a non-executable statement from the intermediate language code,
 - the annotation information corresponding to the annotation
 - representation.
- 10 2. The computerized method as in claim 1, further comprising:
 - generating an annotation information;
 - wherein the annotation information contains an address; and
 - 15 wherein the annotation information contains a plurality of arguments of the annotation representation.
- 20 3. The computerized method as in claim 2, wherein annotation information further comprises an annotation symbol.
4. The computerized method as in claim 2, wherein a convention in the arguments identifies different areas of interest.

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5. The computerized method as in claim 2, further comprising:
generating at least one argument of the annotation representation according to a
software component.
6. The computerized method as in claim 5, wherein the software component is selected
from the group consisting of a macro and a command line definition.
- 10 7. The computerized method as in claim 1, further comprising:
receiving an input argument; and
controlling the generating of the annotation information in accordance with the
input argument.
- 15 8. The computerized method as in claim 1, wherein:
the parsing is performed by the front-end component of a compiler; and
the generating is performed by the back-end component of the compiler.
- 20 9. The computerized method as in claim 1, further comprising:
generating computer executable instructions from source code that is
associated with the annotation representation; and

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associating the annotation information with the computer executable
instructions that is associated with the annotation representation.

10. The computerized method as in claim 1, the generating further comprising:

5 generating annotation information from the intermediate language code, the
annotation information associated with a second function, and each of
the annotation information corresponding to the annotation
representation; and

10 wherein the annotation representation is located inline the second function.

11. The computerized method as in claim 1, further comprising:

generating debug information from predetermined information; and
wherein the debug information is associated with the annotation representation.

15 12 The computerized method as in claim 11, wherein the predetermined information
further comprises command line options.

13. The computerized method as in claim 1, wherein the representation further comprises
a function call and wherein the arguments further comprise parameters.

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14. A computerized method comprising:

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annotating computer source code using an intrinsic function call in the source code.

15. The computerized method as in claim 14, wherein annotating further comprises:
 - 5 generating annotation information from the intrinsic function call;
 - generating a symbol having string parameters of the intrinsic function call;
 - emitting the annotation information into a computer object file; and
 - emitting the symbol to a symbol table associated with the computer object file.
- 10 16. The computerized method as in claim 15, wherein generating annotation information and emitting the annotation information are performed in parallel with generating a symbol and emitting the symbol.
- 15 17. The computerized method as in claim 15, further comprising:
 - 15 generating computer executable instructions from source code that is associated with the intrinsic function call; and
 - associating the annotation information with the computer executable instructions.
- 20 18. The computerized method as in claim 15, wherein a convention in the string parameters identifies different areas of interest in analysis.

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19. A computerized method of controlling a first computer program analysis tool comprising:
reading annotation information in an executable computer program; and
5 controlling execution of the first computer program analysis tool using the information.
20. The computerized method as in claim 19, wherein, the first computer program analysis tool further comprises a program analysis tool selected from the group consisting of a
10 debugger, profiler, a fault injector, and an optimizer.
21. The computerized method as in claim 19, wherein the annotation information having been generated from an intrinsic annotation function call that the executable computer program was compiled from, the annotation information having at least one string parameter.
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22. The computerized method as in claim 19, wherein an output of the first computer program analysis tool is read as input to a second computer program analysis tool.
23. The computerized method as in claim 22, wherein the second computer program analysis tool further comprises a program analysis tool selected from the group consisting of a
20 profiler, a fault injector, and an optimizer.

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24. A computerized method of modifying an executable computer program comprising:
reading annotation information in an executable computer program, and
modifying the executable program in accordance with the information in the
annotation information.
- 5
25. The computerized method as in claim 24, wherein the modifying further comprises:
inserting code into the executable program to perform an action in accordance
with the information in the annotation information.
- 10
26. The computerized method as in claim 24, wherein the modifying further comprises:
optimizing the executable program in accordance with the information in the
annotation information.
- 15
27. The computerized method as in claim 24, wherein the annotation information having
been generated from an intrinsic annotation function call that the executable computer
program was compiled from, the annotation information having at least one string parameter.
28. A computer-readable medium having computer-executable instructions to cause a
computer to perform a method comprising:
parsing an intrinsic annotation function call, thereby generating a parsed

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annotation function; and

generating annotation information from the parsed annotation function.

29. A computer-readable medium as in claim 28, having computer-executable instructions

5 to a cause a computer to perform a method further comprising:

generating a symbol from string parameters of the intrinsic function call; and

emitting the symbol to a symbol table associated with the annotation

information.

10 30. A computer-readable medium as in claim 28, wherein the annotation information

resides in an object file that is stored on a computer-readable medium.

31. A computer-readable medium as in claim 28, wherein the intrinsic annotation function

call is generated by a software component that resides on a computer readable

medium.

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32. A computer-readable medium as in claim 31, wherein the intrinsic annotation function

call is selected from the group consisting of a macro and a command line

definition.

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Sub A → MS docket 136605.1 SLWK docket 777.388us1

33. A computer-readable medium for controlling a computer program analysis tool comprising:
reading annotation information in an executable computer program; and
controlling execution of the computer program analysis tool using the information.

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34. The computer-readable medium as in claim 33, wherein the annotation information having been generated from an intrinsic annotation function call that the executable computer program was compiled from, the annotation information having at least one string parameter.

30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

- 10 35. A computer-readable medium for modifying an executable computer program comprising:
reading annotation information in an executable computer program; and
modifying the executable program in accordance with the information in the annotation information.

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36. The computer-readable medium as in claim 35, wherein the annotation information having been generated from an intrinsic annotation function call that the executable computer program was compiled from, the annotation information having at least one string parameter.

- 20 37. The computer-readable medium as in claim 35, wherein the modifying further comprises:

inserting code into the executable program to perform an action in accordance with the information in the annotation information.

38. A computer-readable medium for annotating a computer program comprising:
5 parsing a source annotation representation, yielding a parsed source annotation representation;
generating annotation information from the parsed source annotation representation.
- 10 39. A computer-readable medium having stored thereon a data structure that is executable by a processor comprising:
annotation information corresponding to an annotation function in a source computer program.
- 15 40. The computer-readable medium as in claim 39, wherein the annotation information further comprises an operand corresponding to parameters of the annotation function in the source computer program.
41. A computer-readable medium having stored thereon a compiler comprising:
20 a front-end component that parses an annotation function call in source code, generating a parsed annotation function; and

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a back-end component operably coupled to the front-end component that generates annotation information from the annotation function call.

42. The computer-readable medium as in claim 41, wherein the back-end component
5 further comprises:

a receiver operably coupled to the front-end component, that receives the parsed annotation function;

a transformer operably coupled to the receiver, that transforms the parsed annotation function into intermediate language code; and

10 a generator operably coupled to the transformer that generates annotation information from the intermediate language code.

43. A computer-readable medium having stored thereon a computer program analysis tool apparatus comprising:

15 a receiver of annotation information from an executable computer program; and an execution controller operably connected to the receiver that controls the execution of the computer program analysis tool using the annotation information

44. The computer-readable medium, as in claim 43, wherein the execution controller
20 overrides the default behavior of the tool using the annotation information.

45. The computer-readable medium, as in claim 44, wherein the computer program analysis tool further comprises a computer program analysis tool.

46. A computer-readable medium having stored thereon a computer program analysis tool
5 apparatus comprising:

a receiver of annotation information from an executable computer program; and
a modifier of the executable program that modifies the executable program in accordance with the annotation information.

10 47. The computer-readable medium as in claim 46, wherein the modifier further comprises an inserter of executable computer code into the executable program to perform an action in accordance with the information in the annotation information.

48. The computer-readable medium, as in claim 46, wherein the computer program
15 analysis tool further comprises a computer program analysis tool.

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